

Urban Infrastructure Technical Advisory Group

Meeting Summary

March 2, 2000

Houston, Texas

Opening Comments

The meeting was chaired by Tom Stevens, the NSF pilot manager for the Source Water Protection pilot. Ten persons participated in the meeting, including three vendors, two technology users, and a consulting engineer, university researcher and EPA representative. Two pilot team members also participated. A complete list of participants is included in [Attachment 1](#). Copies of overheads presented during the meeting are available upon request.

The goals for the meeting included:

- Identify and prioritize technologies for consideration
- Identify key contacts, organizations and conferences for outreach
- Familiarize participants with CIGMAT testing

Review of November 1999 Stakeholder Meeting

A brief review of the meeting of the Infrastructure and Watershed Protection Stakeholder Advisory Group, held in Baltimore on November 18, 1999, was made. The results of the SWP pilot canvass of the State Source Water Protection Plan preparers were reviewed, focusing on the contamination sources associated with infrastructure. These sources included underground storage tanks, above ground storage tanks, wastewater treatment plants, sewer lines and transmission pipelines (chemical and petroleum). The technology areas presented by NSF at the meeting, along with those identified by the SAG meeting participants, included:

- Infrastructure rehabilitation technologies
- Oil/hydrocarbon removal systems
- Soil stabilization/erosion control
- Pipe leak detection
- Spill clean up
- Street sweepers
- Interceptors for solids separation
- Sulfur impregnated concrete for sewer systems

During the SAG meeting, there was agreement that coatings and grouts would be a technology area of focus in the infrastructure area. The Urban Infrastructure Technology Advisory Group (TAG) was formed to identify and prioritize other technologies for the infrastructure area.

Identification of Technology Areas for Consideration

The list developed from the November meeting provided a starting point for discussion of technologies on which to focus for urban infrastructure. The TAG agreed that many of the technologies would be better addressed by the Watershed TAG, including oil/hydrocarbon removal systems, soil stabilization/erosion control and spill clean up. The TAG suggested that street sweepers are not an infrastructure issue, but potentially a technology for consideration by the Wet Weather Flow pilot.

Tony Tafuri, EPA Urban Watershed Management Branch, presented a listing of infrastructure rehabilitation technologies assembled from various sources. The list, presented in [Attachment 2](#), served as a reference for discussion by the TAG. The discussions focused on condensing the longer list into several categories, with specific technologies falling under the categories. The results were:

Assessment of System Integrity

- Leak detection and location
- Corrosion assessment
- Cleaning
- Inspection
- Instrumentation (remote monitoring)

Sewerage Rehabilitation

- Coatings
- Grouts
- Liners
- Sewer replacement (pipe burst, ream, split, etc.)
- Manhole technologies
- Lateral technologies
- Pump station technologies
- Valves and appurtenances

Improved Technologies for Maintenance/New Systems

- Corrosion control (chemical, biological)
- Erosion control
- Obstruction control/removal (roots, fats, oils and grease)

- Pipe materials

There was concern that sewage not be the only focus for the pilot efforts, but that rehabilitation of storm collection systems also be considered. The TAG also discussed the testing envisioned for the technologies. There was agreement that both lab and field testing would be needed, and that testing would be of both short and long term duration.

Prioritization of Technology Areas

The breakout of the technologies provided the basis for prioritizing the technologies for pilot focus. Coatings, grouts and liners were not considered in the prioritization since it was already agreed by the Stakeholder Advisory Group that they be considered (working with Dr. Vipul and the University of Houston's CIGMAT). Considerations to take into account when prioritizing the technology areas were presented, and included:

- The technology has a positive environmental impact
- There is a demonstrated need for the technology
- Vendors of the technology are available
- The test protocol is "do-able"
 - A protocol exists
 - The protocol would not be excessively complex
 - Cost of testing vs. the cost for the technology
- The duration of testing would be within the Pilot period

Each participant was given ten votes, which could be distributed to the technologies as the participant desired (single or multiple votes for a given technology area). No votes were cast for coatings, grouts and liners, as they have already been designated. The total votes for each technology area were totaled, with the following ranking:

- Leak detection and location
- Corrosion control
- Corrosion assessment
- Manhole technologies
- Lateral technologies
- Pipe materials
- Obstruction control/removal
- Erosion control
- Instrumentation
- Cleaning technologies
- Inspection technologies
- Sewer replacement technologies
- Valves & appurtenances
- Pump station technologies

Meeting Wrap Up

Each of the participants was asked to think about individuals with expertise in the different technology areas as potential participants on Technology Panels or peer reviewers. Participants were also asked to identify key organizations and outreach opportunities to gain the broadest exposure for the pilot in the Urban Infrastructure area. Individuals, organizations and outreach activities should be directed to NSF. Dr. Vipul concluded the meeting by providing a tour of the CIGMAT laboratories.

ATTACHMENT 1
List of Participants for
ETV Source Water Protection Pilot
Infrastructure and Watershed Protection
Stakeholder Advisory Group Meeting
November 18, 1999

Participant	Organization	Classification
Rod Dickerson	In-Pipe Technology	Vendor
Ray Frederick	U.S. EPA	Project team
Steve Henning	Avanti International	Vendor
Brant Keller	City of Griffin, GA	Technology user
David Parkhill	Brown & Root Services	Consultant
Greg Potter	Mother Environmental	Vendor
Aldo Ranzani	City of Houston, TX	Technology user
Tom Stevens	NSF International	Project team
Tony Tafuri	US EPA	Federal Agency
C. Vipulanandan	CIGMAT - University of Houston	University

ATTACHMENT 2
Urban Infrastructure Rehabilitation Technologies

Sewer Rehabilitation - Sewer Lining

1. Pipe-within-a-pipe coating
2. Cured-in-place pipe (CIPP) (Insituform or similar process)
3. Slip lining
4. Fold-and-form or deform-reform pipe
5. Spiral-wound pipe lining
6. Segmental lining
7. Shotcrete/gunite relining

Sewer Rehabilitation - Sewer Sealing

1. Grouting
2. Other hole/crack sealants and techniques
3. Keyhole excavation and sealing/repair
4. Robotic spot repair (internal)

Sewer Rehabilitation - Sewer Replacement

1. Open trench excavation and full replacement
2. Local excavation and repair/replacement
3. Trenchless sewer replacement
 - o Pipe bursting/implosion
 - o Pipe splitting, eating, reaming
 - o Pipe ejection/extraction

Improved Technologies for New Sewers

1. Sulfur impregnated concrete pipe
2. Shallow pressure sewers with plastic fused-joint pipe
3. No-dig installation
 - o Plow in (shallow, small diameter pressure sewers)
 - o Horizontal drilling (small diameter pressure sewers)
 - o Microtunneling, auger boring, pipe jerking

Manhole Rehabilitation

1. Coatings
2. Grouting
3. Cured-in-place pipe (CIPP)
4. Sealing rings
5. Manhole inserts

Sewer (Manhole, Pipe, Pump Station, Laterals) Rehabilitation

1. Corrosion Control
 - o Coatings
 - o Linings

- Chemical spraying
- 2. Corrosion and structural repair
 - Cured-in-place pipe (CIPP)
 - Sliplining o Deformed pipe
 - Grouted liners
- 3. I/I control; joint and lateral repair
 - Grouting
 - Sealants
 - Liners
- 4. Enlarge capacity
 - Pipe bursting
- 5. New Construction for Water/Wastewater Systems
 - New pipes and new materials
 - Trenchless technology (microtunneling, horizontal directional drilling)
 - Coatings and linings
 - New technologies

Note: Coatings, linings and grouts can be used for both water and wastewater systems; however, the tests needed for water systems will be somewhat different.

Water System Rehabilitation - Pipe Lining

1. Cement lining
2. Cured-in-place pipe (CIPP) (Paltem or similar processes)
3. Slip lining (larger diameters typically)

Water System - Pipe Lining

1. Keyhole excavation and sealing/repair
2. Corrosion Assessment technologies (e.g. Hydroscope)

Water System - Pipe Cleaning

1. Chemical cleaning technologies (e.g. HERC)
2. Mechanical cleaning technologies

Water System Rehabilitation - Pipe Replacement

1. Open trench excavation and full replacement
2. Local excavation and repair/replacement
 - Pipe bursting
 - Pipe splitting
 - Pipe ejection/extraction

Improved Technologies for New Water Pipes

1. Continuous fused-joint piping systems
 2. No-dig installation
 - Plow in (shallow, small diameter)
 - Horizontal drilling
 - Microtunneling, auger boring, pipe jacking (large diameter)
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